
Patent Claims

1. Membrane producible by shaping a polymer blend or a block copolymer comprising blocks of monomer units, loading the polymer blend or block copolymer with a blowing gas concentration within the polymer blend or block copolymer above a critical concentration at a temperature below a critical temperature, but above the glass transition temperature of the polymer blend/gas or block copolymer/gas mixture and finally stabilizing the foam structure, **characterized in that** as polymer blend a homogeneous polymer blend comprising at least one hydrophilic and at least one hydrophobic polymer and/or a block copolymer of alternating blocks of hydrophilic and hydrophobic monomer units is used, both the polymer blend and the block copolymer having a solubility relating to the used foaming gas above the critical concentration.
2. Membrane according to claim 1, **characterized in that** it is foamed at a temperature at least 10°C below the critical temperature.
3. Membrane according to claim 1 or 2, **characterized in that** it is foamed above a critical concentration which is at least 40, preferably at least 43, especially at least 45, especially at least 47 cm³ (STP)/cm³ of the polymer blend or block copolymer.
4. Membrane according to one of claims 1 to 3, **characterized in that** at least one of the components of the polymer blend is amorphous or semi-crystalline.
5. Membrane according to one of the claims 1 to 4, **characterized in that** the polymer blend or block copolymer after shaping is charged with the foaming gas at a temperature below the glass transition temperature of the polymer blend/gas mixture or block copolymer/gas mixture and is then foamed by increasing the temperature to above the glass transition temperature of the polymer blend/gas mixture or block copolymer/gas mixture, but below the critical temperature the polymer blend/gas mixture or block copolymer/gas mixture.
6. Membrane according to one of the claims 1 to 4, **characterized in that** after shaping at a temperature above the glass transition temperature of the polymer blend/gas mixture or block copolymer/gas mixture but below the critical temperature of the polymer blend/gas mixture or block copolymer/gas mixture the mixture is charged with the foaming gas and thereafter it is foamed by pressure decrease.

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7. Membrane according to one of claims 1 to 4, **characterized in** that before shaping the melt of the polymer blend/gas mixture or block copolymer/gas mixture it is fed with the foaming gas into an extrusion tool and is foamed there at or before the exit from the extruder tool at a temperature above the glass transition temperature of the polymer blend/gas mixture or block copolymer/gas mixture, but below the critical temperature by the occurring pressure decrease.
8. Membrane according to one of claims 1 to 7, **characterized in** that as foaming gas carbon dioxide is used.
9. Membrane according to one of claims 1 to 8, **characterized in** that the foam structure after foaming is stabilized by chilling, preferably in an ethanol/water mixture.
10. Membrane according to one of claims 1 to 9, **characterized in** that it contains as hydrophobic polymer at least one of polysulfone, polyethersulfone, polyetherimide, polycarbonate or any mixture thereof.
11. Membrane according to one of claims 1 to 10, **characterized in** that it contains as hydrophilic polymer at least one of polyvinylpyrrolidone, sulfonated polyethersulfone and polyethylloxazoline or at least one functionalized polysulfone, polyethersulfone, polyetherimide or polycarbonate or any mixtures thereof.
12. Membrane according to one of claims 1 to 11, **characterized in** that the glass transition temperatures of the components of the polymer blend are similar, preferably not more different than 200°C, especially 150°C, more preferably 100°C.
13. Membrane according to one of claims 1 to 12, **characterized in** that the polymer blend or block copolymer has a hydrophilicity, which allow wetting of the membrane surface with blood, plasma or other aqueous solutions.
14. Membrane according to one of claims 1 to 13, **characterized in** that it exists in the form of a flat membrane or hollow fibre membrane or monofilament membrane.
15. Use of a membrane according to one of the claims 1 to 14 for medical purposes, especially for the haemodialysis, haemofiltration, haemodiafiltration, plasmapheresis, immunotherapy, micro- or ultrafiltration or gas separation.